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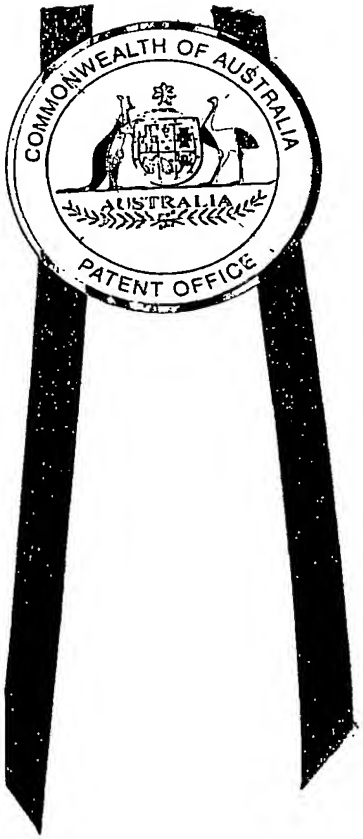

WITNESS my hand this
Ninth day of April 2003

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GLIDESTORE FREETRACK PTY LTD

AUSTRALIA

PATENTS ACT 1990

PROVISIONAL SPECIFICATION FOR AN INVENTION ENTITLED:-

"DRIVE MECHANISM FOR A TRACK MOUNTED BODY"

This invention is described in the following statement:-

This invention relates to a drive mechanism for a track mounted body and in particular to a mechanism that enables movement of the body along the tracks without the use of a load bearing drive wheel.

An example of where the invention will find application are track mounted shelving units. Such shelving units are designed to provide compact storage by having the shelving units abut against one another with only one access opening being provided within which the shelves can be accessed. The shelves can be separated by moving them along the track to open up access at different points along the assembled shelves.

In many instances, shelves are moved manually although it is common to provide a manual crank mechanism or electric drive means to move the shelves. This is particularly necessary when there are a number of shelves that have a high combined weight.

The conventional means of providing a drive to each of the shelves is to connect the track mounted wheels to some form of drive means. This means that an axle extends across the base of each shelf to which the wheels are mounted. The shaft is then connected to some form of independent drive means which may be a manually rotated handle or an electric motor driven through a reduction gear box.

The need to mount a shaft within the base of the shelf unit results in added cost and complexity to the shelving unit. It would be desirable to have a drive mechanism that could be easily fitted to shelving units that were designed to be manually moved. Accordingly, it is an object of this invention to provide such an arrangement that meets this objective and overcomes the above mentioned problems.

In its broadest form, a drive mechanism for a body, wherein said body has a plurality of load bearing track engaging wheels that allows said body to move along said track, comprises;

a first drive shaft attached to said track mounted body that is arranged to be manually or mechanically driven,

a non-load bearing drive wheel that is ground engaging and attached with respect to said track mounted body, and

a drive coupling between said drive shaft and said drive wheel wherein rotation of said drive shaft causes rotation of said drive wheel and said drive wheel in turn causes said body to move with respect to said tracks.

The above invention avoids the need to have a drive axle mounted through the base of each shelf unit. In addition, it enables a simple arrangement to be attached to an existing shelf unit to convert it from a shelf unit that needs to be manually pushed along the tracks to a unit that incorporates a drive mechanism.

The drive shaft preferably is manually rotated via a capstan wheel or a crank but could equally be driven by an electric motor and reduction gear box.

The drive wheel applies force to move the body by pushing against the surface or ground on which the body is mounted. Preferably, the periphery of the drive wheel comprises a high friction material such as a polyurethane material and surface against which the periphery of the wheel engages which is also roughened or has a high coefficient of friction to avoid slippage of the drive wheel.

Preferably, the drive coupling comprises reduction gearing between the drive shaft and drive wheel. The gearing can comprise many different types of components such as tooth belts, v-belts, meshing gear wheels and the like. One preferred arrangement is the use of a first tooth belt that extends from the drive shaft towards the base of the body. This belt drives a first gear that in turn drives a second gear and there is a belt that extends from the second gear to a gear that is attached to the drive wheel which in turn rotates the drive wheel.

In order to fully understand the invention, a preferred embodiment will be described. However, it should be realised that the invention is not necessarily

restricted to the precise details of this embodiment. In particular, the embodiment is described in relation to application of the invention to a shelving system. However, there may be other applications to which the invention could be equally suited.

The invention is illustrated in the accompanying drawings in which
Figure 1 shows three shelf units, two of which are track mounted, and
Figure 2 shows a perspective view of the drive mechanism according to this invention.

Referring to Figure 1, there are three shelf units 10, 11 and 12 with shelves 13. Shelf units 11 and 12 are mounted to tracks 14 via wheels 15. Tracks 14 provide a longitudinal recess within which the wheels 15 locate. A pair of wheels 15 are used at each side of the shelf units 11 and 12 and are rotatably mounted within a housing which is attached at each side of the unit 11 and 12.

The shelf unit 10 is an end shelf unit and therefore is fixed with respect to the tracks 14. Shelf units 11 and 12 are moved along the tracks 14 to provide access between various pairs of shelves. For example, shelf unit 11 can be moved so as to open up access between shelf unit 11 and 10.

Figure 2 shows a more detailed view of the drive mechanism. It comprises a drive shaft 17 to which a hand operated wheel 18 is attached. The drive shaft 17 is rotatably secured to a column 19 with column 19 attached to the side of the shelf unit.

A first drive belt 20 extends from the drive shaft 17 to a first gear (not drawn). The belt 20 is an internal tooth belt and the shaft 17 has a corresponding gear either attached or incorporated into the drive shaft 17 that engages with the first belt 20. For ease of drafting purposes the teeth on the first drive belt 20 and the second belt 22 are not drawn.

The first gear is rotatably linked to the second gear 21. The second gear 21 drives a third gear 23 via the second belt 22. The third gear 23 is rotatably linked to the drive wheel 24 which engages the drive wheel track 25 via a linear strip 26.

Both the first and second gears 21 and third gear and drive wheel 23, 24 are mounted within a carriage 27. The carriage 27 is in turn pivotally attached to the side of the shelf unit via a pivot connection 28. In this embodiment the pivot connection 28 is secured to a housing 29 within which the track wheels 15 are rotatably mounted and which is secured to the lower edge of the shelf unit.

A spring 30 applies a downward force to the carriage 27 so that the carriage 27 is rotated in an anti clockwise direction. This acts to force the drive wheel 24 against the linear strip 26. A bracket 31 is secured to the shelf unit and the carriage 27 has a flange 32 that locates beneath the bracket 31. The spring 30 is held under compression between the bracket 31 and the flange 32 so that the necessary rotated force is applied to the carriage 27.

The drive wheel track 25 is preferably co-extruded with the track 14. The linear strip 26 of the drive wheel track 25 is preferably roughened or has an abrasive strip adhered to it. The drive wheel 24 preferably has a polyurethane tyre which, in combination with the linear strip 26, provides maximum grip. This grip, in combination with the force applied by the spring 30 is sufficient to ensure that the drive wheel 24 does not slip with respect to the linear strip 26.

Although this preferred embodiment uses a drive or track 25, the invention would equally work without such a track where the drive wheel 24 engages a floor such as a linoleum surface.

The advantage of the pivotally mounted carriage 27 is that a perfectly level track is not required. The floor surface or drive or track 25 may have undulations which are accommodated by the spring 30 and movement of the carriage 27.

As seen in Figure 1, a cover 34 may be located over the full length of the side of the shelf unit to cover the column 19 and first drive belt 20 and a second cover 35 covers the carriage 27.

The gear on the drive shaft 17, first gear 20, second gear 21, third gear 23 and the drive wheel 24 have diameters that provide the required gear ratio that gives adequate speed of movement of the shelving unit while at the same time not requiring excessive effort to be applied to the hand operated wheel 18.

It will be clear from the above description that the invention provides a unique means of providing a drive mechanism for track mounted bodies such as shelf units. The drive mechanism does not make use of a load bearing wheel and does not require the installation of an axle through the base of the unit moving along the track.

The design is useful in that it can be manufactured so as to fit to units that are designed to be manually moved. However, the design could equally be incorporated into the shelfing unit rather than being a bolt on assembly.

Dated this 26th day of March, 2002

Glidestore Freetrack Pty Ltd
By its Patent Attorneys
MADDERNS

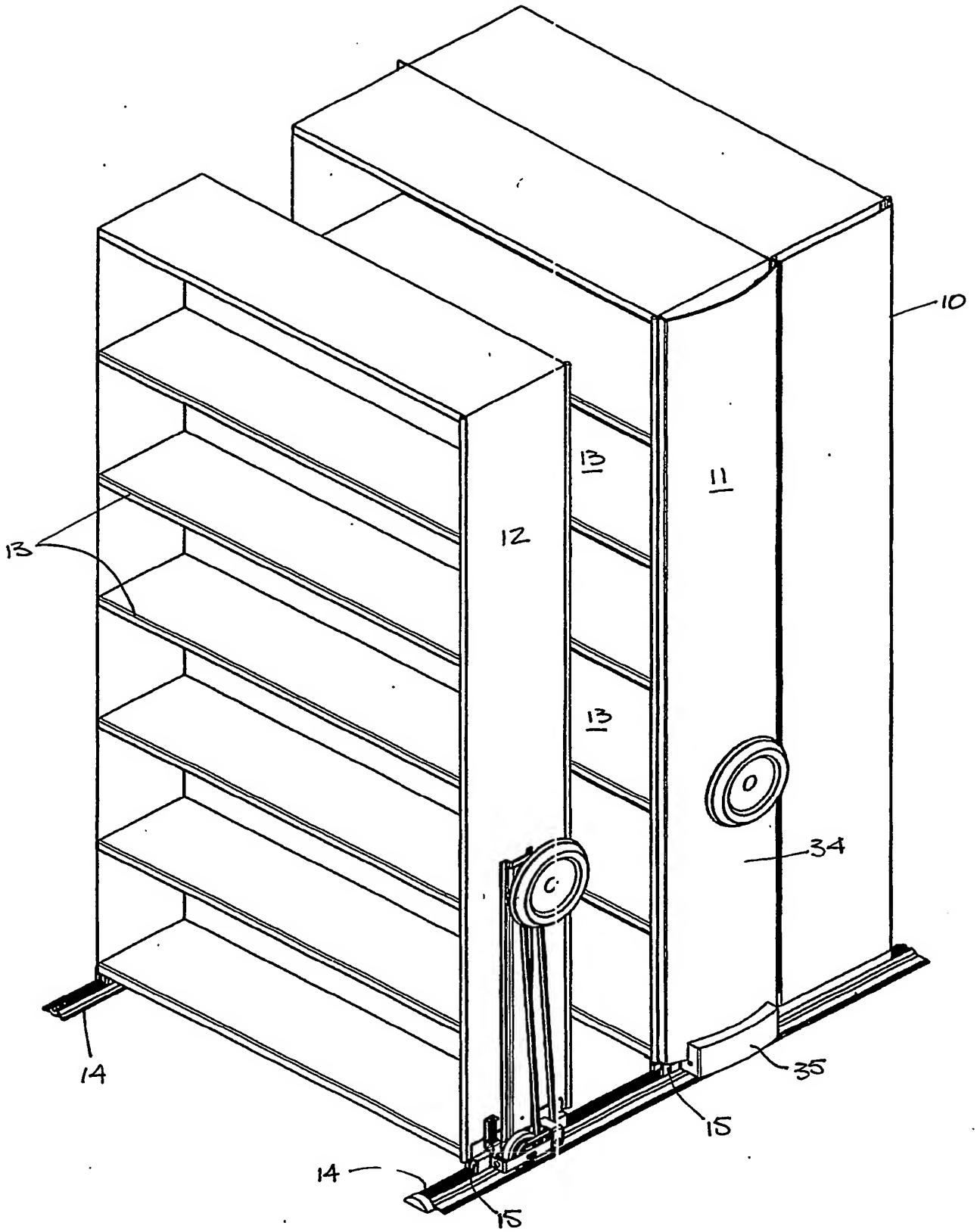

Fig 1

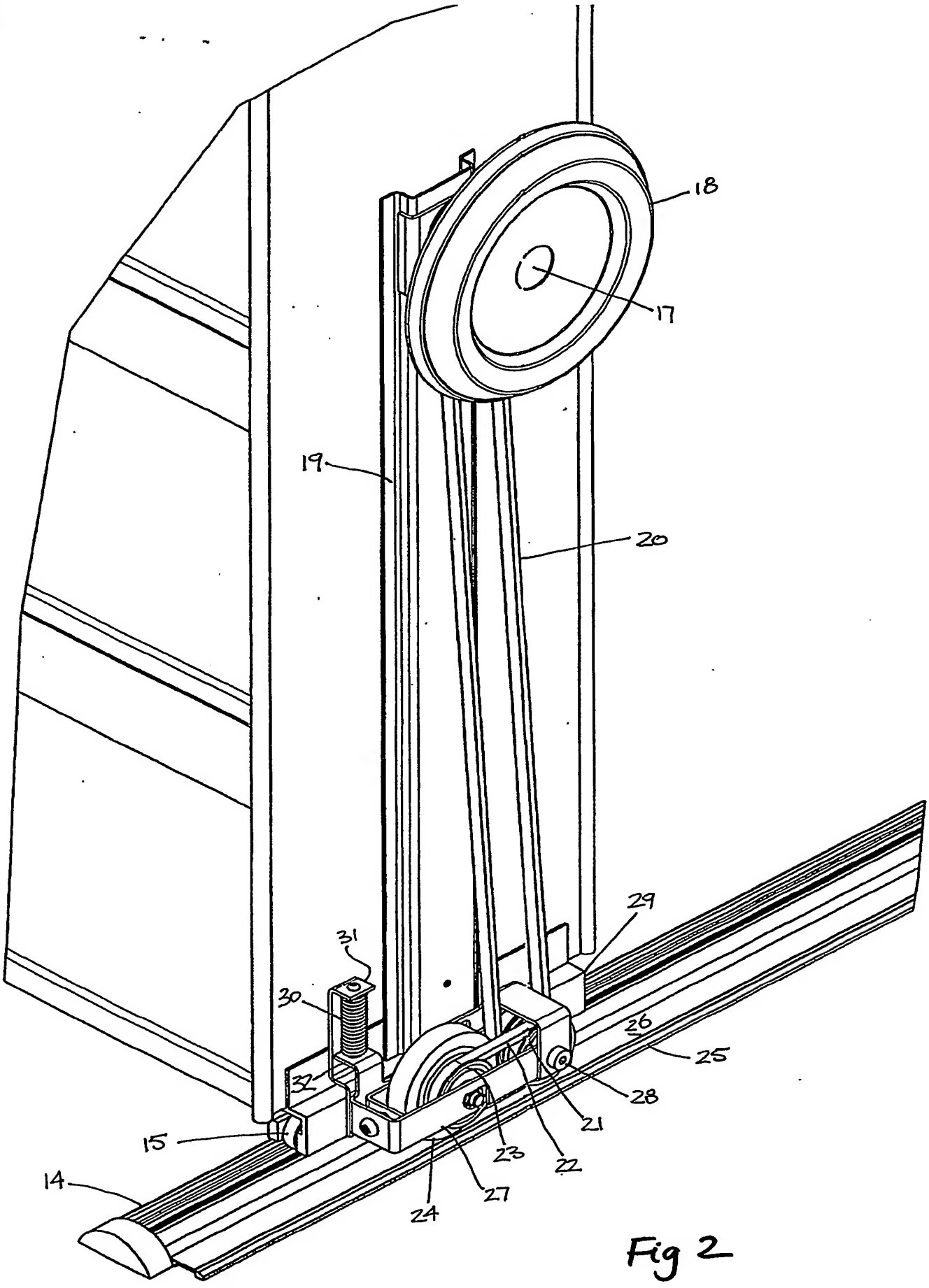

Fig 2